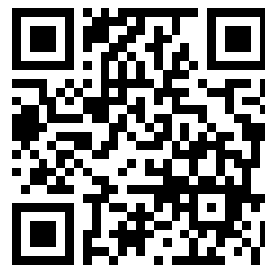


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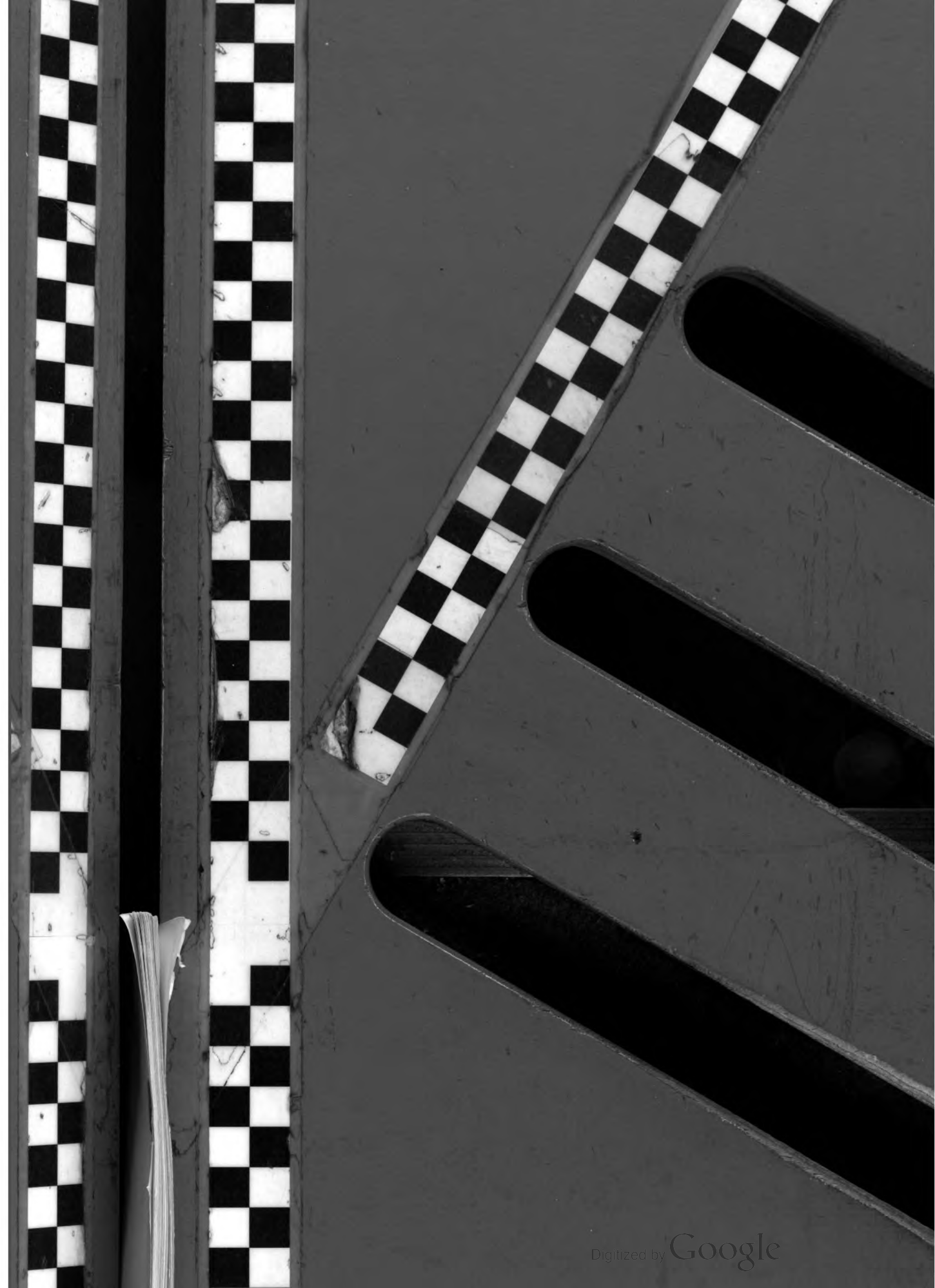
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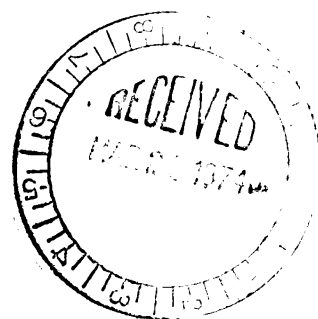
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DRAFT

ENVIRONMENTAL IMPACT STATEMENT

HAYWARD CREEK LOCAL FLOOD PROTECTION PROJECT  
BRAINTREE & QUINCY, MASSACHUSETTS

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Prepared by

DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

February 1974





## TABLE OF CONTENTS

### Preface

### Summary Sheet

### Environmental Impact Statement

|  |      |
|--|------|
| 1. Project Description   | 1-1  |
| 2. Environmental Setting Without the Project   | 2-1  |
| a. Braintree, Quincy and vicinity  | 2-1  |
| b. Overview of Hayward Creek Watershed   | 2-2  |
| c. Topographic Features of the Watershed   | 2-4  |
| d. Geology of the Watershed  | 2-5  |
| e. Climate of the Watershed  | 2-6  |
| f. Ecology of the Watershed  | 2-7  |
| g. Description of Water Courses and Ponds  | 2-7  |
| • Ross Creek   | 2-9  |
| • Hayward Creek  | 2-9  |
| • Hayward Creek Wetland  | 2-10 |
| • Hayward Pond   | 2-11 |
| • Echo Lake Creek  | 2-11 |
| 3. The Environmental Impact of the Proposed Action   | 3-1  |
| a. Human and Economic Impacts  | 3-1  |
| b. Ecological Impacts  | 3-1  |
| 4. Adverse Environmental Impact, Which Cannot be Avoided Should the Project be Implemented   | 4-1  |
| 5. Alternatives to the Proposed Action   | 5-1  |
| a. General Solutions   | 5-1  |
| (1) Nonstructural Measures   | 5-1  |
| (2) Structural Measures  | 5-2  |
| b. Alternative 0. Conduit Only   | 5-2  |
| c. Alternative 1. No Additional Storage in Hayward Pond  | 5-3  |
| d. Alternative 2. Addition Storage in Hayward Pond   | 5-3  |
| e. Alternative 3. Intermediate Flood Control Pool in the Wetland Storage Reservoir   | 5-4  |
| 6. The Relationship between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity | 6-1  |
| 7. Any Irreversible or Irretrievable Commitment of Resources which would be Included in the  | 7-1  |



## 8. Coordination with Other Agencies

8-1

### Pictures

1969 and 1970 floods

Following Page 2-4



## SUMMARY SHEET

### HAYWARD CREEK LOCAL FLOOD PROTECTION PROJECT BRAINTREE AND QUINCY, MASSACHUSETTS

(X) Draft

( ) Final

Responsible Office: U.S. Army Engineer Division, New England,  
Waltham, Mass.

1. Name of Action: ( ) Administrative (X) Legislative

2. Description of the Action: This is a local flood protection project designed to afford protection to the lower portions of the Hayward Creek Watershed. The plan selected provides for temporary flood water storage in the natural valley wetlands above Hayward Pond by the means of a new dam 12 feet high. Increased storage in Hayward Pond itself will be accomplished by raising the existing dam and road four feet. This storage capability will be augmented by channel improvement and the installation of larger diameter concrete pipe conduits to increase the discharge capacity of Hayward Creek in the section below Hayward Pond to the Weymouth-Fore River outfall.

3. Environmental Impacts: The significant human and economic impact of the proposed project would be the elimination of the frequent danger and economic loss caused by flooding. The maximum projected water level rise in the wetlands behind the 12 foot high dam during a 100-year storm would peak about three feet above base level of the wetlands. The maximum retention time under this condition would be fifty hours. According to the findings of an independent biological study of the project area, there are no plant species occurring in the swamp that would be injured by a temporary inundation of this nature. The study concluded that the short and long term impacts of temporary, occasional flooding to the communities of plants, invertebrates, and wildlife in the project area are not of major concern since in most wetlands, changes in water level during storm run-off are part of the natural cycle. The re-routing of Echo Creek from its present rubbish strewn, waste material stream bed to a more pristine environment associated with the wetlands will create a new environmental niche for stream associated plants and invertebrates. Approximately thirty areas of wetlands and water surface acquired for project purposes will become permanent open space with high wildlife values in a densely crowded urban area. Responses at the public meetings, independent biological studies, review by Corps biologists all indicate the only possible adverse effect would be the continuation of the present oil and grease pollution of Ross Creek flowing into Hayward Creek. State water quality classification of the streams indicate clean-up of pollution sources would occur prior to this project.



4. Alternatives: Conduit only, no additional storage. Additional flood control storage in Hayward Pond, intermediate flood control pool in the wetland storage reservoir.

5. Comments Requested:

a. Federal

Department of Interior  
Department of Housing and Urban Development  
Department of Agriculture  
Environmental Protection Agency  
Department of Health, Education and Welfare

b. State

Department of Natural Resources  
Office of Planning and Program Coordination

c. Regional

Metropolitan Area Planning Council

d. City

Mayor Walter J. Hannon, Quincy  
Selectmen, Weymouth and Braintree

6. Draft Statement sent to CEQ 21 MAR 1974  
Final Statement sent to CEQ





1. PROJECT DESCRIPTION. The proposed plan consists of providing flood control storage to El 28 ft. mean sea level (msl) in the natural valley wetlands above Hayward Pond by constructing a new dam about 12 feet high and increasing the storage in Hayward Pond to El 24 ft. msl by raising road and dam 4 feet. These dams would be augmented by channel improvement and concrete pipe conduits to increase the discharge capacity of Hayward Creek below the pond to the outfall at Weymouth Fore River. Details of the proposed plan for Hayward Creek are shown on Plate 1. The main structural features of the plan are as follows:

- Increase potential flood storage in Hayward Pond by 35 acre feet and enable flood storage of 60 acre-feet in the natural valley wetland above the pond.
- Improve and clear the open channel from Hayward Pond to West Howard Street.
- Install a new 54-inch reinforced concrete conduit between West Howard Street and Quincy Avenue.
- Install a new 90 inch reinforced concrete conduit from Quincy Avenue to the outfall at Weymouth Fore River. The design discharge of the conduit is 225 cfs.
- Install new 48-inch and 60-inch reinforced concrete conduits in the open channel subject to tidal influence between West Howard Street



and Quincy Avenue to connect the existing 42-inch storm system to the new 90-inch conduit at Quincy Avenue.

- Construct a low concrete wall and dike at the southeast corner of Hayward Pond to prevent flooding of the low area around the pond.

- Re-route Echo Creek through the wetland to contain the runoff from this sub-area behind the new dam. This will assure more effective utilization of the available storage.

The only nonstructural measure required to implement the proposed plan are the purchase of about 30 acres for the reservoir areas and the acquisition of about 10 acres in temporary and permanent easements.

- In addition, there are lands adjacent to the proposed project which could be acquired for development by non-Federal interest for potential conservation and recreational use. The purchase of such lands would, however, not be within the scope of this proposed plan, although local officials have expressed intent in acquiring such lands for recreational use.

- The total project cost is estimated at about \$1.9 million including the non-Federal portion of about \$404,000. The total annual financing charges are estimated at \$131,000. The average annual benefits are estimated at \$182,000, including \$164,000 for flood prevention, \$17,000 for area redevelopment and \$1,000 for increasing the fish and wildlife resources



of the area. The benefit to cost ratio derived for the proposed plan amounts to greater than unity. The total construction of the project is estimated to be 18 months.



## 2. ENVIRONMENTAL SETTING WITHOUT THE PROJECT:

### a. BRAINTREE, QUINCY AND VICINITY

The Hayward Creek Watershed is located on the eastern end of the boundary between the City of Quincy and the Town of Braintree. Braintree, with a land area of 9,200 acres, has a population of 35,000 while Quincy has a land area of 10,650 acres and a population of 88,000.

The proximity of these municipalities to Boston has resulted in their intensive development and population growth. Quincy has little vacant land and has grown slowly in the last decade. Braintree has a large amount of vacant land and good access to Boston by limited access highways Rt. 128 and the Southeast expressway. For these reasons, it is likely to continue growing in the future. A recent study projects a 48,000 population for Braintree by 1990 which is a 37 percent increase and a 92,000 population for Quincy by that date, which is a 5 percent increase. These projections appear to be reasonable as compared with other forecasts made by the Office of State Planning and Management, the Boston Transportation Planning Review as well as the Metropolitan Area Planning Council (MAPC).

The economic base of Quincy and Braintree relates closely to Boston. Both municipalities have good highway access and Quincy is served by mass transit. Plans are underway to extend the South Shore extension of the mass rapid transit line to Braintree and perhaps even beyond because





of the increased usage experienced in this transported mode when it was extended to Quincy in 1971. The proximity of the area to the ocean makes it suitable for heavy industry, in addition to other economic development.

In 1970 Braintree had approximately 600 firms and an employment of 14,000 persons with a total annual payroll of almost \$91 million. The major types of employment in 1970 were trade, manufacturing and the service industry, each accounting for 43 percent, 30 percent and 11 percent, respectively.\*

In 1970 Quincy had approximately 1,500 firms with 32,000 employees whose total annual payrolls totaled \$238 million. Manufacturing and trade, respectively, constitute 37 percent and 30 percent of the total employment. The largest single employer, the General Dynamics Quincy Shipbuilding Division, has a normal work force of 2,900 employees. The 1971 Boston Transportation Planning Review Study projected employment in Braintree to reach 24,000 and in Quincy to reach 54,500 by 1990.

b. OVERVIEW OF THE HAYWARD CREEK WATERSHED.

From its eastern limits along the Fore River tidal estuary, the Hayward Creek watershed extends westward about 1.3 miles and from north to south has a maximum width of about 0.8 miles. The study area shown on Plates 2 and 3 comprises about 540 acres, of which about 390 acres are in

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\*Mass. Dept. Commerce and Development Monograph.



Braintree and 150 acres in Quincy. From a drainage standpoint the watershed is divided into upper and lower areas by Hayward Pond. The upper watershed is predominantly undeveloped while the lower area has a high degree of residential, commercial, and industrial development. The distinguishing physical features of the study area are a large expanse of barren wasteland, the aftermath of extensive stone quarrying operations north of the Fore River Railroad tracks in an area known as South Commons and a greenbelt of wetlands and woodlands extending west from Hayward Pond to beyond the railroad tracks.

Six storms have produced major floods in the watershed in the past 20 years. The first, accompanying hurricane Carol, dropped over 5-inches of rainfall on 10-11 September 1954. Then, the maximum storm of record in the area, hurricane Diane, produced about 13 inches of rainfall and major flooding in the period 17-19 August 1955. On 17 and 18 March 1968, a slow moving coastal storm caused near maximum flooding in the area. Even though rainfall was far less than in 1955, runoff rates had increased due to urban development since the earlier storm. Again, on 26 and 27 December 1969, a slow moving "northeaster" caused severe flooding in the area. Most recently, in February 1972 and in December 1973, serious flooding occurred in the watershed. Photographs of the February 1972 and the December 1969 storms are shown on the following pages. The record



storm of 1955 flooded about 25 acres in the Hayward Creek watershed and this event is estimated to occur once in 20 years. The floods of March 1968 and December 1969 are estimated as recurring 10 year and 5 year events, respectively. It is estimated that a recurrence of 1968 flood levels would produce \$209,000 in damages under 1974 physical and economic conditions. A 100-year event would affect 38 acres and cause even greater economic losses.

c. TOPOGRAPHIC FEATURES OF THE WATERSHED

Hayward Creek is about one and one-half miles long. It rises in Braintree, east of Commercial Street and flows through a swampy area to Hayward Pond, also known as Eaton's Pond. From Hayward Pond the creek follows along the Fore River Railroad tracks to West Howard Street from where it is piped to a depression on the upper west side of Quincy Avenue. From Quincy Avenue the creek is conveyed in a conduit northeasterly across the General Dynamics Shipyard to the Fore River. The topographic features of the watershed are shown on Plates 2 and 3.

The topography above Hayward Pond varies from essentially flat wetlands to gently rolling with steeper slopes near the northern and western limits of the watershed. Penns Hill at the western extremity rises to an elevation of about 200 feet. Hayward Creek falls steeply from



FEBRUARY 1972 STORM  
HAYWARD CREEK WATERSHED



**SOMEONE SAID 'GET A BOAT'** - Edward Trask of Needham sits, soaked and shivering, atop his car after it was trapped in a massive puddle on West Howard St., Quincy, in wake of yesterday's storm which pelted area with heavy rain. *Boston Globe Photo*



**HELP! - Edward Trask of Needham sits on top of his waterlogged car on Howard Street, East Braintree, flooded under three feet of water yesterday. Behind him is the Moose Hall, which was inundated to a depth of six or eight inches.**

*Quincy Patriot  
Ledger Photo*







**DECEMBER 1969 FLOOD - HAYWARD CREEK WATERSHED - QUINCY AVE.**





an elevation of about 100 at its source to an elevation of about 24 ft. msl at the swamp and thence gradually to about El 18 ft. msl at Hayward Pond. The creek channel below the pond falls sharply to El 5 ft. msl at West Howard Street. The bottom of the depression which extends upstream of Quincy Avenue varies from about two feet above to five feet below mean sea level.

Hayward Pond, the largest body of water in the watershed covers an area of about 4.5 acres. A multi-unit apartment development has recently been constructed east of and adjacent to the pond and the eastern bank has been riprapped with large stones. Two smaller ponds, Echo Lake and Wendell Pond are situated at the Quincy-Braintree boundary west of Hayward Pond near the bend in the Fore River Railroad tracks. Wendell Pond, the old Wendell Quarry, drains to Echo Lake. The latter has been almost completely filled with rock residue from quarrying. A small stream, referred to as Echo Creek, flows from Echo Lake along the railroad tracks to disappear underground near Hayward Pond. The major wetlands above Hayward Pond comprise about 11 acres extending along the creek for more than 1,200 feet. Another small stream, Ross Creek, flows into the swamp from the south.

#### d. GEOLOGY OF THE WATERSHED

Low knobs on the gently rolling land around Hayward Pond



have frequent bedrock outcrops and a thin veneer of till. Slopes are not high but are steep and bedrock supported.

Bedrock upstream of the pond is light gray, fine ground Quincy granite which is Carboniferous in age. Higher cliffs nearby to the north are remnants of quarrying operations. There is occurrence of a second formation, the Braintree Slate, a few hundred feet east of Quincy Avenue. The rock is dark gray, thick bedded argillite and its contact with the granite is intrusive with only slight movement and no known zone of disturbance.

e. CLIMATE OF THE WATERSHED

The study area, with an average annual precipitation of 43 inches and a mean annual temperature of 50 degrees F, has a variable climate characterized by frequent but generally short periods of heavy precipitation. The area lies in the path of intense rainfall and high tide produced by coastal storms which travel up the Atlantic seaboard in the form of hurricanes of tropical origin, as well as storms of extratropical nature, often called "northeasters". The area is further exposed to continental storms which move across the region under the influence of the "prevailing westerlies" and summer thunderstorms produced by local convective activity or by more general frontal activity.



f. ECOLOGY OF THE WATERSHED

From an ecological standpoint portions of the Hayward Creek Watershed bears the marks of unwise land use. The ground surface over much of the upland appears to have undergone mechanical disturbance such as that resulting from the operation of heavy equipment possibly granite quarrying.

Most of the waters suffer visually from the effects of varying degrees of pollution and degradation. A film of clouded, discolored pollution is often visible at the surface of the creek which coats rocks and nearby vegetation. The major source of the surface film in the watershed appears to be from Ross Creek. The water emits foul odors in many places. Solid waste and refuse is strewn throughout undeveloped portions of the study area with the heaviest deposits tending to occur in the vicinity of the streams and ponds. The Massachusetts Division of Water Pollution Control is currently investigating the sources of pollution. Abatement efforts are expected to achieve the intended "B" classification for future use.

Certain portions of the upland forest show evidence of having been thinned; the crown cover tends to be sparse and the shrub layer contains dense growths of seedlings and saplings.





The plant growth on the upland portion of the proposed open space area consists primarily of oak dominated forest in various stages of regrowth with patches of abandoned field and young shrub interspersed throughout. The major species of forest trees are Red Oak, Black Oak, and White Oak, mostly in the 12-18 inch diameter class, with some individual trees attaining girths in excess of 24 inches. The density of the overstory ranges from sparse cover to 40 to 50 percent canopy closure. The shrub layer throughout most of the forest occupies from about 60 percent to nearly 100 percent of the available space in this layer. The species composition consists of oak reproduction and such forest shrubs as Chokecherry, Catbrier, Huckleberry, and Blueberry. From the species present in this layer and their anticipated responses to competition, a mature, full canopy oak forest will eventually develop in this open space area.

The young shrub growth represent earlier stages in the succession to oak forest. Although oak reproduction is beginning to establish, the young oaks are not as abundant as in the thinned oak forest. The major shrub species in the early successional stages are Blackberry, Sweetfern, Sumac, Gray Birch and Huckleberry. The predominant herbaceous plants are Goldenrod, Wild Carrot, White Sweet Clover, Pokeweed, Sarsaparilla,



and such grasses as Barnyard Grass, Ticklegrass, and Quack Grass.

In lowland portions of the study area in the vicinity of streams and standing water, the plant species are primarily those which are adapted to saturated soil or periodic inundation, or which grow only in water. The large wetland that Hayward Creek flows through on its course to Hayward Pond contains trees and shrubs typical of saturated soils and herbaceous plants found both in marshes and abandoned fields. The streams and edges of standing water contain emergent vegetation, and where the water is of sufficient depth, submerged and floating leaved plants occur.

g. DESCRIPTION OF WATER COURSES AND PONDS.

- Ross Creek. This creek surfaces from a 24 inch underground concrete conduit, the opening of which is located approximately 200 feet from Hayward Street. Near its origin and at other points investigated, the water is odoriferous and coated with a visible surface film.

The vegetation that grows along Ross Creek represents low diversity, again the effect of oil and grease. Ross Creek eventually empties into Hayward Creek above hayward Pond in the wetlands.

- Hayward Creek. This creek originates in Braintree, east of Commercial Street. Just upstream from its discharge into Hayward Pond, the



water is turbid and coated with a film which covers the surface and the rocks in places. Solid waste is strewn about this segment of the stream. From Hayward Pond the creek flows in an open channel for about 700 feet to West Howard Street. This portion of the Creek is typified by a mixture of wetland, trees and shrubs, and opportunistic weeds. The water in this reach appears to be of better quality than that observed in the section of the stream above Hayward Pond.

- From West Howard Street, the creek is piped to a depression between West Howard Street and Quincy Avenue. The existing storm drain from the southern portion of the watershed also empties into this open depression to join Hayward Creek. This portion of Hayward Creek is a brackish mud flat. The productivity of this mud flat is extremely low, particularly for organisms that form food chain links for commercial and recreational fish and shellfish. Virtually all of the plants that grow in the vicinity of this brackish flat, above the water line, are common place weeds that occur in almost any waste area such as the vicinity of dumps, junkyards, vacant lots, and areas of disturbance. From Quincy Avenue the Creek is conveyed in a conduit northeasterly across the General Dynamics Shipyard to Fore River.

- Hayward Creek Wetland. The wetlands located above Hayward Pond contains three major plant growth forms, herbs, shrubs, and trees which



are segregated to form discreet areas of marsh, shrub edge, and tree swamp. Forming the outer edge of the wetland, and grading into the upland hardwood forest is Red Maple dominated swamp. The Massachusetts Fern is reported to occur along the outer boundary of the wetland. The marsh and shrub species are mostly those which are adapted to growing on saturated soils and being inundated.

- Hayward Pond. The characteristics of the Pond along its perimeter vary somewhat from one end to the other and on opposite sides. At the north end, aquatic invertebrate diversity is very low. The water is turbid and there is a surface film. The shoreline vegetation on the entire side of the pond adjoining the apartment complex is very sparse with Bur Reed and Pond weed occurring in small patches. The terrestrial vegetation that occurs along the shoreline at the south end of the pond is primarily shrub growth. The data indicates that the pond is especially productive, particularly with regard to amphibians and fish.

- Echo Lake Creek. This small creek flows from the remnants of Echo Lake, which, in turn, receives a portion of its recharge from Wendell Pond. Echo Lake is only a fraction of its original size because of the filling that has taken place, possibly in conjunction with quarrying





and gravel removal activities in the adjacent pit. Visually, water is not clear, and characteristically, it contains a surface film. Both borders of this creek segment contain boulders, chunks of tar, and other fill material.



### **3. THE ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION**

#### **a. HUMAN AND ECONOMIC IMPACTS**

The significant human and economic impact of the proposed project would be alleviating the periodic danger and economic losses caused by flooding. The proposed project will eliminate flooding from a 25-year frequency storm which would incur flooding to approximately 25 acres of land. At 100-year flood levels, the project will reduce flooding from 38 acres to 2.5 acres.

The proposed project would maintain the recreational potential of Hayward Pond as a source of recreational fishing.

During construction, the traffic along Quincy Avenue and West Howard Street would be disrupted. In addition, there would be the usual noise and dust which occurs during construction projects. Dust and traffic disruption resulting from construction should not be a problem if normal precautions are taken such as watering the dust and phasing the road cut on Quincy Avenue so as not to tie up more than one lane at a time. Construction noise would be maintained within the State's acceptable level by beginning work after 7 a.m. and not working at night.

As reported by the Massachusetts Historical Commission and the Braintree and Quincy Historical Societies, whose letters are included as a part of this statement, no historical sites are located in the study area.

#### **b. ECOLOGICAL IMPACTS**

The flood control project, proposing construction of a low dam for the purpose of storing water in the upstream wetlands, places certain stresses on the natural environment.



The singular factor of water quality concern for all alternatives is the coating of waste petroleum products on the emergent stream vegetation and the adjacent flood plains flora. However, field observations indicated that little or no petroleum coatings have accumulated on stream bank vegetation during recent flooding. Since the existing and proposed structures would impound millions of gallons of water during flood events, the expected dispersion of waste oil and grease would not present a significant coating problem on any affected vegetation.

When the sources of waste oil are identified and the disposal practices abated, recreational use of the Class B water should not be impaired by the proposed dams. The dams will be storing floodwater only during flood periods and the detention time will be relatively short. The Hayward Pond site, which involves raising the present structure, will not alter the existing impoundment during normal streamflow conditions. Since the water quality of the stream and pond have not been degraded by the present dam, raising the structure without affecting normal pool elevation should not affect future water quality. The augmenting upstream flood storage sites will store water in the upstream wetlands only during floods. Since they will not alter normal streamflow, no adverse effects on water quality are expected.

The construction of a conduit from a point west of Howard Street to Fore River would cause temporary disruption of traffic on Howard Street and Quincy Avenue and some inconveniences to operations in the General Dynamics Shipyard, such as moving materials and possibly some track and utility poles. However, these inconveniences appear to be temporary and



not of a serious nature and will be compensated by the elimination of future traffic disruption from flooding. It is planned to install a conduit in the depression, or tidal flat, between Quincy Avenue and West Howard Street. Plans to cover the conduit to ground level with solid fill would eliminate the brackish tidal flat. However, the destruction of this flat does not represent a significant environmental loss and is not expected to decrease productivity in the Fore River estuary. Aesthetically, it may be a great improvement because it will mean burying the solid waste presently strewn along the flat. Furthermore, a breeding ground for mosquitoes would be eliminated.

The project proposes clearing the channel of Hayward Creek from the outlet of Hayward Pond downstream to West Howard Street as shown on Plate 1. The result of this action would be the destruction of the wetland trees, shrubs and opportunistic weeds associated with this section of the creek. This is not considered to represent a significant loss and this community of organisms is expected to reestablish itself in a few years. However, from a flood control standpoint, it is desirable to keep the channel clear. This would also eliminate a breeding ground for mosquitoes.

Diverting the flow of Echo Creek through a new stream bed and into the wetlands would effectively eliminate the plants and organisms that depend upon the existing streamflow. The loss of this sparse amount of wetland vegetation and limited stream organisms is not very significant and a new wetland community would be encouraged to develop in and along the banks of the new stream bed. This community would be similar to the original in composition of plant species, have a substratum available for colonization by stream invertebrates and provide habitat for herpetofauna.





4. ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROJECT BE IMPLEMENTED

The adverse impacts of constructing a dam and storing floodwater in the wetland upstream along Hayward Creek are those attributable to short term inundation of the flora and the habitat of the associated fauna. The portions of the wetland that will be impacted by the project are Hayward Creek and the surrounding wetland and the lower part of Ross Creek.

Echo Creek would be completely rerouted by diverting its channel to flow into the swamp. The plants and organisms associated with the Creek would be succeeded by terrestrial forms within a few years. It is not to be expected that the normal water level in the pond would be affected by this diversion. However, the opportunity to reestablish this community of organisms will occur with the construction of the new stream bed.

The tidal flat portion of Hayward Creek, between Quincy Avenue and West Howard Street, would be completely eliminated by installing a conduit to carry its flow, and filling to ground level. The organisms, algae, and plankton associated with this tidal flat would be eliminated along its entire length. The surface of the fill would be colonized by opportunistic herbaceous and shrubby weeds. This is not expected to represent a significant loss in productivity to the Fore River Estuary.



## 5. ALTERNATIVES TO THE PROPOSED ACTION

### a. GENERAL SOLUTIONS

Possible alternative measures to alleviate flooding problems can usually be divided into the two broad categories of nonstructural and structural measures. Nonstructural measures include floodplain zoning, building code regulations, floodproofing of individual buildings, and permanent evacuation of floodplain areas. Structural measures include storage reservoirs, channel improvements, levees, diversions, and relief conduits, separately or in combination. The no action alternative has not been considered because the importance of alleviating the unpleasantness and danger of the flooding problem is clear.

#### (1) Nonstructural Measures

Nonstructural measures do not attempt to reduce or eliminate flooding, but are to regulate the use and development of the floodplain, thus lessening damaging effects of large floods. Inasmuch as the frequency of damaging flooding on Hayward Creek is annual, and sometimes semiannual, nonstructural measures are not, in themselves, considered a practical solution. Open space development, for example, is not feasible in the flooded area because of the high assessed valuation of the properties involved. Furthermore, the basic cause of the Hayward Creek flood problem is structural i.e., the inadequate size of the existing conduit conveying the creek flow from Quincy Avenue to Fore River. Consequently, adequate structural measures which solve the flood problem will essentially eliminate the need for nonstructural measures.



## **(2) Structural Measures**

Feasible engineering solutions to the flood problems narrowed the choice to two main approaches: (1) to rely entirely on improving and enlarging the discharge system from Hayward Pond to Fore River; or (2) to provide additional flood storage in the Hayward Pond and in the wetlands upstream in conjunction with improving the discharge system downstream. Alternative solutions have, therefore, been formulated in varying combinations ranging from no storage whatsoever up to a maximum storage utilization at Hayward Pond and providing additional storage by constructing a low dam further upstream.

Four alternative plans of structural measures, which present separate flood control solutions are described as follows:

### **b. ALTERNATIVE 0. CONDUIT ONLY**

This alternative presumes ultimate development of the study area including the elimination of Hayward Pond. It would provide large conduits on Hayward Creek extending from 450 feet above West Howard Street to the Fore River. In addition to being the most expensive alternative, this plan would effectively eliminate the entire ecosystem in the pond. Alternative 0 is shown on Plate 4.

Perhaps the major ramification of this alternative would be the loss of the recreational fishing opportunities. A playground built over the site of the pond might provide alternative opportunities but the water resource would be the more valuable and is more pleasing aesthetically.

It could be argued that this alternative might make extra land available for development thereby producing additional tax revenue. However, the higher density development in this location might also serve



to depress adjacent residential real estate values. All facts considered, the higher cost and negative environmental impacts disqualify this alternative.

c. ALTERNATIVE 1. NO ADDITIONAL STORAGE IN HAYWARD POND

This alternative presumes minimum development of Hayward Pond for flood control storage. The plan would provide a new and much larger outlet works at Hayward Pond, for channel clearing below the pond to a point 250 feet above West Howard Street, and encasement of Hayward Creek in new conduit from West Howard Street to the Fore River. This alternative is designed primarily to increase the capacity of the drainage system from Hayward Pond to Fore River. Because of a larger outlet, this plan would provide less flood storage retention in Hayward Pond than Alternatives 2 and 3 and pond levels would return to normal much quicker after storms. During a 100 year storm, the maximum water rise would be about three feet and the duration would not be sufficient to damage the vegetation along the banks of the pond or to seriously disrupt the wildlife usage of habitats. The main reason for not selecting this plan is because of its significantly higher cost. Alternative 1 is shown on Plate 5.

d. ALTERNATIVE 2. ADDITIONAL FLOOD CONTROL STORAGE IN HAYWARD POND

This alternative would provide flood control storage in Hayward Pond to about EL 23 ft.  $\pm$  1 under design flood conditions. This level is about 5.5 feet above the normal water level in the pond. Structural measures provided would be similar to those of Plan 1 except that the inlet to a smaller relief conduit extending to Fore River would be just upstream of West Howard Street.





With this alternative, the maximum rise in the level of Hayward Pond resulting from a 100-year storm would be about 5.5 feet. This flood level would inundate vegetation on the banks of Hayward Pond but the duration would not be of sufficient length to damage the plants or disrupt habitats of wildlife in this zone. Alternative 2 is shown on Plate 6.

This alternative was not selected because, while it was significantly more expensive than the selected plan, it did not provide greater benefits.

e. ALTERNATIVE 3. INTERMEDIATE FLOOD CONTROL POOL IN THE WETLAND STORAGE RESERVOIR

Under this plan a low dam was considered at two possible locations to provide flood storage in the wetlands above Hayward Pond to about El. 26 ft. msl, and flood storage in Hayward Pond to about El. 23 ft. msl. The additional storage afforded by this alternative would further reduce the required conduit sizes on lower Hayward Creek than under alternatives 0, 1 and 2. Details of alternative 3 are shown on Plate 7.

Alternative 3 does not provide for maximum storage of flood waters above Hayward Pond as does the selected plan and consequently requires larger conduits downstream from Hayward Pond to its outfall. Under Plan 3, there would be less area inundated during floods in the wetlands and less impact on the natural environment because of the lower storage elevation than in the selected plan. However, this alternative is somewhat more costly than the selected plan and would not provide as high a degree of positive flood protection.



6. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT  
AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

There would be some short-term effects from the project, especially on the plant and animal life in the wetland area because of inundation during flood conditions. However, the long-term human and economic benefits from better flood control and an improved source of recreational fishing will enhance the long-term productivity of the area in terms of economic, recreational and aesthetic values.



**7. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES WHICH  
WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED**

Installing a conduit in the tidal flat portion of Hayward Creek adjacent to Quincy Avenue will effectively eliminate this resource. However, due to the highly polluted and degraded condition of the tidal flat, its destruction does not represent a serious loss to the ecology of the area.

The channel clearing of Hayward Creek and the rerouting of Echo Creek will result in the displacement of the aquatic plants and organisms presently existing along the borders of the respective creek. However, the temporary loss of these colonies is not considered significant to the ecology of the area, as they will reestablish themselves on the rerouted stream bed.



## **8. COORDINATION WITH OTHER AGENCIES**

Coordination has been maintained throughout the planning process for this project with Federal, State, and local agencies which have responsibilities or interest in the project.

### **Specific Federal Agencies included:**

Fish & Wildlife Service  
National Park Service  
Bureau of Outdoor Recreation  
Department of Housing and Urban Development  
Soil Conservation Service  
Environmental Protection Agency

### **State Agencies:**

Department of Natural Resources  
Massachusetts Water Resources Commission  
Division of Marine Fisheries  
Massachusetts Historical Commission  
Office of Planning and Programming Coordination  
New England River Basins Commission

### **Regional:**

Metropolitan Area Planning Council

### **Local:**

Braintree Selectmen  
Braintree Planning Board  
Braintree Conservation Commission  
Braintree Historical Society  
Braintree Town Engineer  
Mayor of Quincy





Quincy Conservation Commission

Quincy Planning Department

Private:

General Dynamics

Quincy Shipbuilding Division

To encourage public participation in the planning process an initial public meeting in June 1972 was held in Quincy to provide a forum for the public to express its voices and suggestions for alleviating the flooding problems of the lower Hayward Creek watershed. After more than 14 months of studying possible alternative ways to solve the problem a Plan Formulation public meeting was held in Quincy on 19 September 1973 to present the several alternative plans developed for flood control in the Hayward Creek Watershed and to incorporate public desires in plan formulation and choice of the most desirable alternative.

The plan selected at the public meeting which is discussed in detail in Section 1 consists basically of providing flood control storage in the natural valley wetlands above Hayward Pond by constructing a new dam about 12 feet high and increasing the storage in Hayward Pond by raising the existing road and dam four feet. These dams would be augmented by channel improvement and concrete pipe conduits to increase the discharge capacity of Hayward Creek below the pond to the outfall at Weymouth Fore River.

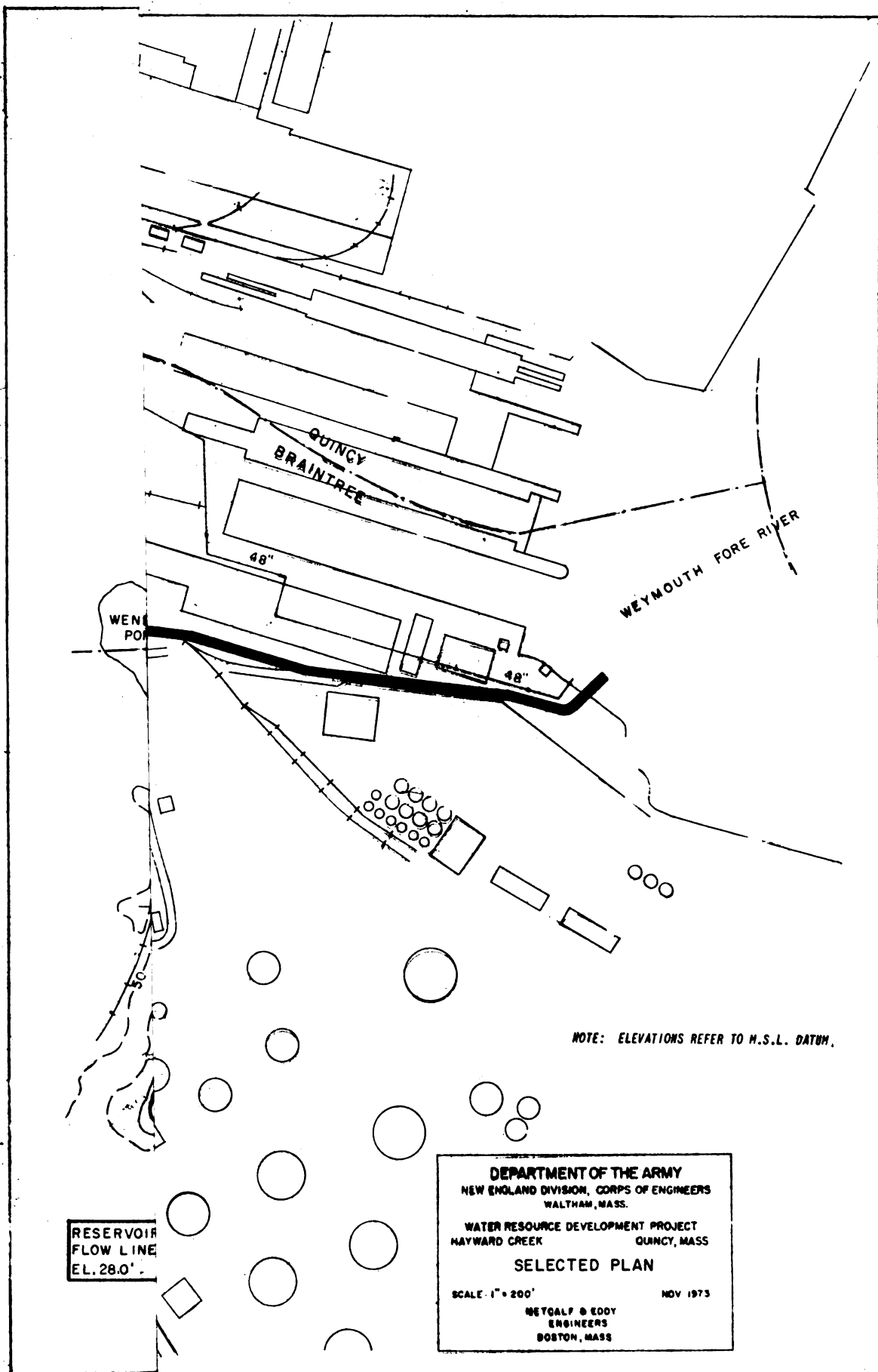
This draft statement will be furnished to all agencies engaged in the coordination process as well as private organizations and individual citizens. All contributions and comments will be incorporated



into the final statement.

A press release will be issued the same day as the draft statement to notify those not on our mailing list of its availability.







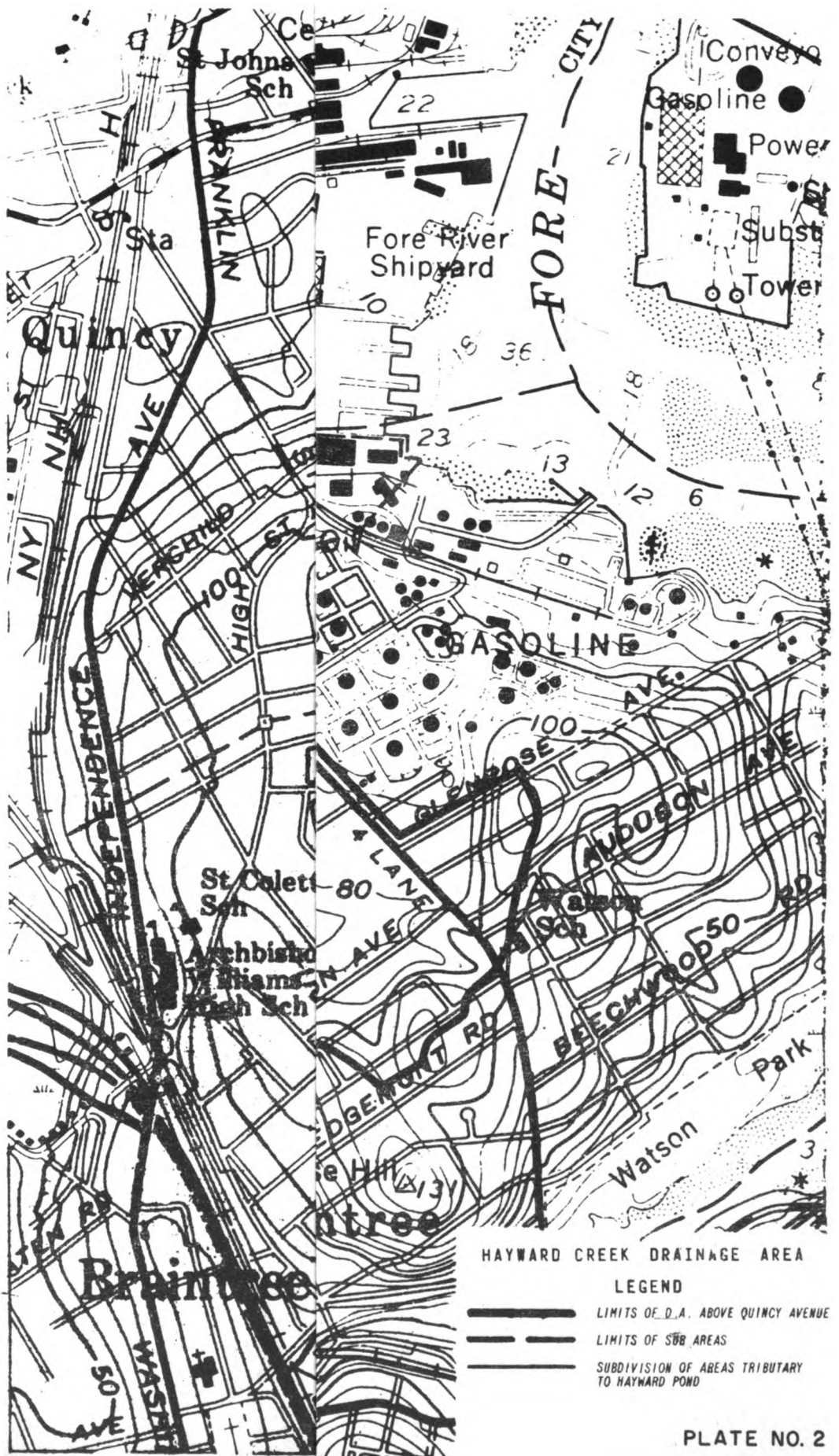


PLATE NO. 2







AERIAL PHOTO TAKEN MAY 1971

DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION  
CORPS OF ENGINEERS  
WALTHAM, MASS.

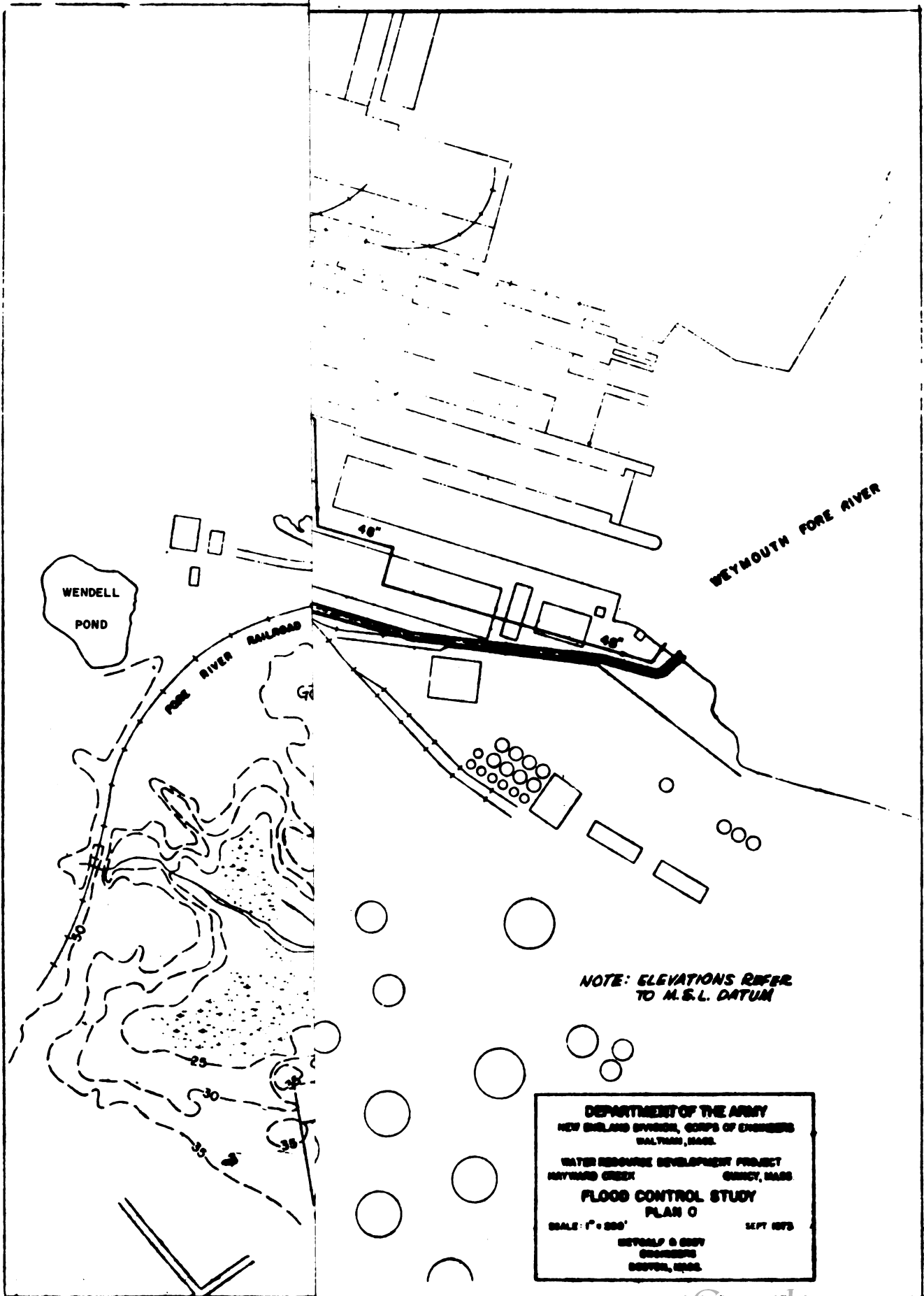
WATER RESOURCE DEVELOPMENT  
PROJECT  
HAYWARD CREEK      QUINCY, MASS.

FLOOD CONTROL STUDY

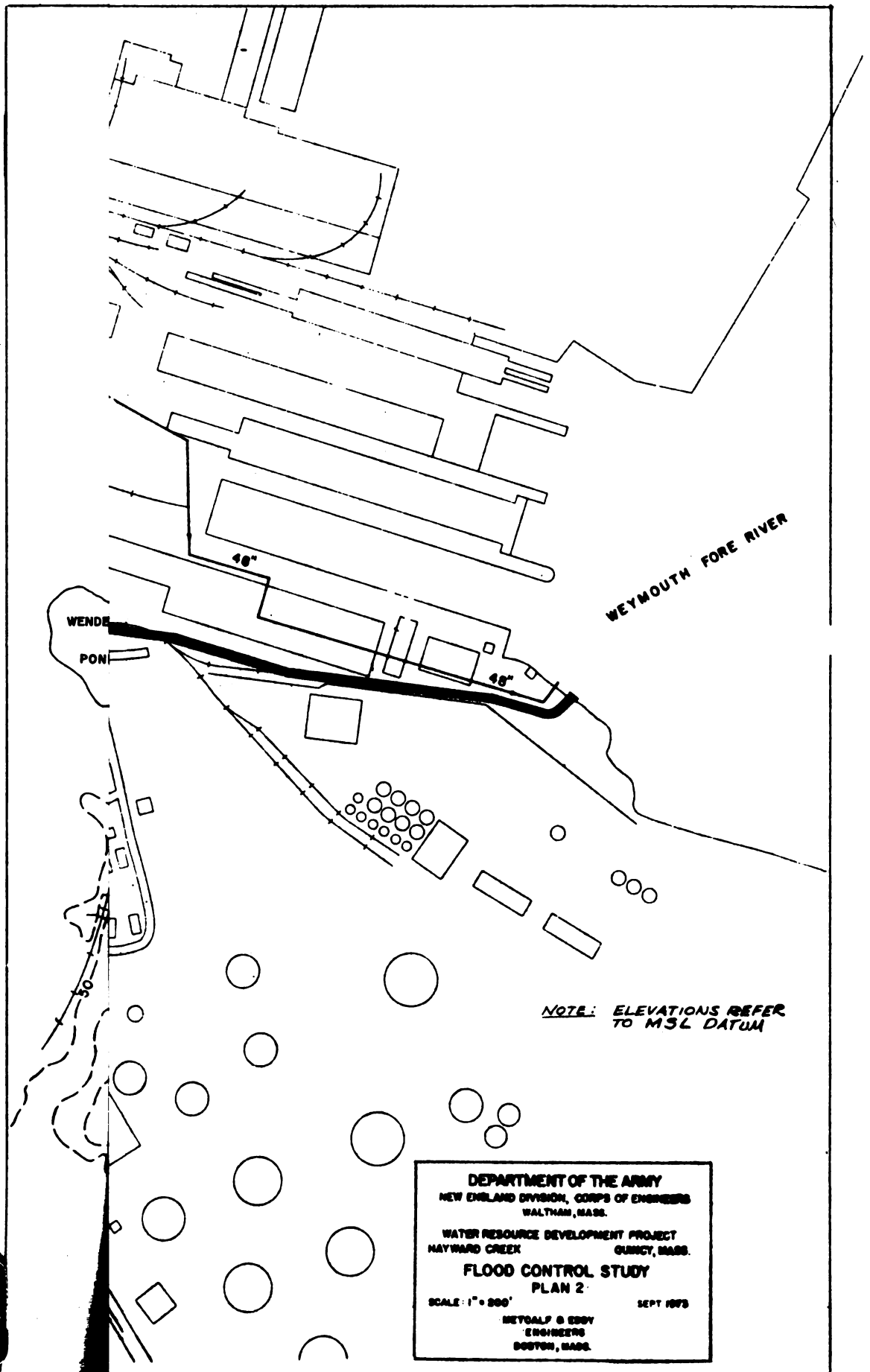
SCALE: 1"=500'      SEPTEMBER 1973

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NOTE: ELEVATIONS REFER  
TO MSL DATUM

DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
WALTHAM, MASS.  
WATER RESOURCE DEVELOPMENT PROJECT  
MAYNARD CREEK QUINCY, MASS.  
**FLOOD CONTROL STUDY**  
**PLAN 2**  
SCALE: 1" = 500' SEPT 1973  
METCALF & EDDY  
ENGINEERS  
BOSTON, MASS.



